What is claimed is:

1. An orthogonal frequency division multiplexing (OFDM) receiver of a wireless Local Area Network (LAN) system, comprising:

a radio frequency (RF) module, adapted to receive a radio signal, and to extract therefrom and output an OFDM analog signal;

an analog-to-digital (A/D) converter, adapted to sample and convert the OFDM analog signal into an OFDM digital signal;

a first differential cross-correlation unit, adapted to perform a first cross-correlation for the OFDM digital signal and an expected differential value of a short training symbol, and to output a first differential cross-correlation value;

a second differential cross-correlation unit, adapted to perform a second cross-correlation for the first differential cross-correlation value and an auto correlation value of the expected differential value of the short training symbol, and to output a second differential cross-correlation value;

a first peak value detection unit, adapted to compare a previous first peak value $Z(d_{max}*(i-1))$, which is a peak value among a previous M sample values of the second differential cross-correlation value, with a present first peak value $Z(d_{max}*(i))$, which is a peak value among a following M sample values of the second differential cross-correlation value, in response to a second boundary detection signal indicating that a second condition is satisfied, and to output a first boundary detection signal corresponding to a first condition;

a second peak value detection unit, adapted to compare a previous second peak value $Z(d_{max+1}*(i-1))$, which is a next sample value after the previous first peak value among the previous M sample values of the second differential cross-correlation value, with a present second peak value $Z(d_{max+1}*(i))$, which is a next

sample value after the present first peak value among the following M sample values of the second differential cross-correlation value, in response to the first boundary detection signal indicating that the first condition is satisfied, and to output the second boundary detection signal corresponding to the second condition;

a symbol clock generator, adapted to determine a location $d_{max}*(i-1)$ of the previous first peak value as a boundary between a long training symbol interval and a short training symbol interval, and to generate a symbol clock synchronized to the location $d_{max}*(i-1)$, when at least one of the first boundary value detection signal indicating that the first condition is not satisfied, and the second boundary value detection signal indicating that the second condition is not satisfied, is active; and

an inverse fast Fourier transform (IFFT) unit, adapted to synchronize the OFDM digital signal to the symbol clock, to perform an IFFT for the synchronized digital signal, and to output a digital symbol.

2. The OFDM receiver of claim 1, wherein the cross-correlation is performed to calculate the differential cross-correlation value using equations below:

$$P_k = b_k e^{j(2\pi\Delta f k T_s + \theta_0)}$$

$$b_k = \sum_{n=0}^{N-1} a_n e^{j\frac{2\pi nk}{N}}$$

wherein P_k is a k-th signal sample representing the digital signal, b_k is an ideal k-th signal sample, T_s is a sample interval, θ_0 is an initial phase value, N is a point size of IFFT, and a_n is a data symbol from a transmission side transmitted on a n-th sub-channel;

$$R1(k) = b^*_{k-1} b_k$$

wherein R1(k) is the differential value of the short training symbol;

$T(d) = P_{k+d-1}P^{*}_{k+d}$

wherein d is a location of a time area; and

$$Z1(d) = \sum_{k=1}^{16} T(d)R1(k)$$

$$= \sum_{k=1}^{16} (P_{k+d-1}p^{*}{}_{k+d})(b^{*}{}_{k-1}b_k)$$

$$= \sum_{k=1}^{16} (b_{k+d-1}b^{*}{}_{k+d})(b^{*}{}_{k-1}b_k)e^{j(2\pi\Delta f T_s)}$$

wherein Z1(d) is the differential cross-correlation value.

3. The OFDM receiver of claim 1, wherein the first condition is expressed mathematically as the following equation:

$\beta * Z(d_{max}*(i-1)) < Z(d_{max}*(i))$,

wherein β is an arbitrary coefficient, $Z(d_{max}*(i-1))$ is the previous first peak value, $d_{max}*(i-1)$ is the location of the previous first peak value, $Z(d_{max}*(i))$ is the present first peak value, and $d_{max}*(i)$ is a location of the present first peak value.

4. The OFDM receiver of claim 3, wherein β is less than 0.5.

5. The OFDM receiver of claim 1, wherein the first boundary detection signal becomes non-active if the first condition is satisfied, and becomes active if the first condition is not satisfied.

6. The OFDM receiver of claim 1, wherein the second condition is expressed mathematically as the following equation:

$\gamma * Z(d_{max+1}*(i-1)) < Z(d_{max+1}*(i))$,

wherein γ is an arbitrary coefficient, $Z(d_{max+1}^*(i-1))$ is the previous second peak value, $d_{max+1}^*(i-1)$ is a location of the previous second peak value, $Z(d_{max+1}^*(i))$ is the present second peak value, and $d_{max+1}^*(i)$ is a location of the present second peak value.

7. The OFDM receiver of claim 6, wherein γ is less than 0.35.

8. The OFDM receiver of claim 1, wherein the second boundary detection signal becomes non-active if the second condition is satisfied, and becomes active if the second condition is not satisfied.

9. An orthogonal frequency division multiplexing (OFDM) receiving method of a wireless LAN system, comprising:

receiving a radio signal, and extracting therefrom and outputting an OFDM analog;

sampling and converting the OFDM analog signal into a digital signal;

performing a first cross-correlation for the digital signal and a difference value of a short training symbol according to an OFDM standard, and outputting a first differential cross-correlation value;

performing a second cross-correlation of the first differential cross-correlation value and an auto correlation value of the difference value of the short training symbol, and outputting a second differential cross-correlation value;

comparing a previous first peak value $Z(d_{max}^*(i-1))$, which is a peak value among a previous M sample values of the second differential cross-correlation value, with a present first peak value $Z(d_{max}^*(i))$ which is a peak value among a following M

sample values of the second differential cross-correlation value, in response to a second boundary detection signal indicating that a second condition is satisfied, and outputting a first boundary detection signal corresponding to a first condition;

comparing a previous second peak value $Z(d_{max+1}*(i-1))$, which is a next sample value after the peak value among the previous M sample values of the second differential cross-correlation value, with a present second peak value $Z((d_{max+1}*(i))$ which is a next sample value after the peak value among the following M sample values of the second differential cross-correlation value, in response to the first boundary detection signal indicating that the first condition is satisfied, and outputting the second boundary detection signal corresponding to the second condition;

determining the location $d_{max}*(i-1)$ of the previous first peak value as a boundary of a long training symbol interval and a short training symbol interval according to the OFDM standard, and generating a symbol clock synchronized to the location $d_{max}*(i-1)$, when at least one of the first boundary detection signal indicating that the first condition is not satisfied, and the second boundary detection signal indicating that the second condition is not satisfied, is active; and

synchronizing the digital signal to the symbol clock, performing IFFT for the synchronized digital signal, and outputting a digital symbol.

10. The OFDM receiving method of claim 9, wherein the cross-correlation is performed to calculate the differential cross-correlation value using equations below:

$$P_k = b_k e^{j(2\pi\Delta f k T_s + \theta_0)}$$

$$b_k = \sum_{n=0}^{N-1} a_n e^{j\frac{2\pi nk}{N}}$$

wherein P_k is a k-th sampled digital signal representing the digital signal, b_k is an ideal k-th signal sample, T_s is a sample interval, θ_0 is an initial phase value, N is a point size of IFFT, and a_n is a data symbol from a transmission side transmitted on a n-th sub-channel;

$R1(k) = b^*_{k-1} b_k$

wherein R1(k) is the differential value of the short training symbol;

$T(d) = P_{k+d-1} P^*_{k+d}$

wherein d is a location of a time area; and

$$Z1(d) = \sum_{k=1}^{16} T(d) R1(k)$$

$$= \sum_{k=1}^{16} (P_{k+d-1} p^*_{k+d})(b^*_{k-1} b_k)$$

$$= \sum_{k=1}^{16} (b_{k+d-1} b^*_{k+d})(b^*_{k-1} b_k) e^{j(2\pi \Delta f T_s)}$$

wherein Z1(d) is the differential cross-correlation value.

11. The OFDM receiving method of claim 9, wherein the first condition is expressed mathematically as the following Equation:

$\beta * Z(d_{max}*(i-1)) < Z(d_{max}*(i))$,

wherein β is an arbitrary coefficient, $Z(d_{max}*(i-1))$ is the previous first peak value, $d_{max}*(i-1)$ is the location of the previous first peak value, $Z(d_{max}*(i))$ is the present first peak value, and $d_{max}*(i)$ is a location of the present first peak value.

12. The OFDM receiving method of claim 11, wherein β is below 0.5.

13. The OFDM receiving method of claim 9, wherein the first boundary detection signal becomes non-active if the first condition is satisfied, and becomes active if the first condition is not satisfied.

14. The OFDM receiving method of claim 9, wherein the second condition is expressed mathematically as the following Equation:

$\gamma^*Z(d_{max+1}^*(i-1)) < Z(d_{max+1}^*(i))$,

wherein γ is an arbitrary coefficient, $Z(d_{max+1}^*(i-1))$ is the previous second peak value, $d_{max+1}^*(i-1)$ is a location of the previous second peak value, $Z(d_{max+1}^*(i))$ is the present second peak value, and $d_{max+1}^*(i)$ is a location of the present second peak value.

15. The OFDM receiving method of claim 14, wherein γ is less than 0.35.

16. The OFDM receiving method of claim 9, wherein the second boundary detection signal becomes non-active if the second condition is satisfied and becomes active if the second condition is not satisfied.